

Chapter 5, 6 Study Guide: Matter and Forces in Motion

1. What are two factors that determine speed? _____
2. What is the SI unit for speed? _____
3. What is the difference between speed and velocity? _____
4. A rabbit hops 10 m to the east in 2 seconds.
 - A. What is the rabbit's average speed? _____
 - B. What is the rabbit's average velocity? _____
5. What do you need to know to calculate an object's acceleration? _____
6. A hiker's velocity begins at 2.0m/s uphill and changes to 1.5m/s uphill. How do you know that the hiker has a negative acceleration? _____
7. What is the term used to describe a net force of 0N? _____
8. What type of force causes a change in speed, direction, or both? _____
9. What is the net force on an object when you combine a force of 20N north with a force of 5N south? _____
10. What force opposes motion between two surfaces that are in contact? _____
11. When a mover puts furniture on wheels, what type of friction is he using? _____
12. What type of friction keeps a block in place? _____
13. Give an example of a way to increase friction. _____
14. Give an example of how friction can be helpful. _____
15. Give an example of how friction can be harmful. _____
16. If you roll a ball on the ground, why does it not continue to roll forever? _____
17. Define mass. _____
18. Explain the difference between mass and weight. _____
19. The law of universal gravitation states that gravitational force is related to _____ and _____. .
20. The gravitational pull is greater between two objects that have _____. .
21. As the distance between two objects increases, the force of gravity between them _____. .
22. With no air resistance, if a feather and an elephant are dropped from the same height and at the same time, which will land first? _____

23. What does air resistance cause the speed of an object to do? _____
24. Why would a crumpled piece of paper hit the ground before a flat piece of paper? _____

25. What is Newton's 1st Law of Motion? _____
26. What is Newton's 2nd Law of Motion? _____
27. What is the equation for Newton's second law of motion? _____
28. What makes it harder to change the motion of a watermelon than of an apple? _____
29. What is Newton's third law of motion? _____
30. How does inertia relate to the mass of an object? _____
31. How can you increase the momentum of an object? _____
32. The total momentum of objects is conserved unless _____.
33. Define independent variable. _____
34. Define dependent variable. _____
35. Define control. _____
36. Define controlled variable. _____
37. Henry notices that his shower is covered in a strange green slime. His friend tells him that coconut juice will get rid of the green slime. Henry decides to check this out by spraying half of the shower with coconut juice. He sprays the other half of the shower with water. After 3 days of "treatment" there is no change in the appearance of the green slime on either side of the shower.
- A. What is the independent variable? _____
- B. What is the dependent variable? _____
- C. What is the control? _____
- D. List a controlled variable. _____